HARDWARE

FLOWSHARK® PULSE

For Closed Pipes

The FlowShark® Pulse with insertion sensor from ADS® is a high performance liquid flow monitor for use in closed pipes. It is designed for high accuracy and reliability, utilizing the most advanced velocity measurement technology available – gated cross correlation with digital pattern detection. Ease-of-use is also a design priority. Programming can be done completely on the built-in backlit display and data can be viewed and manipulated with any software that can read text files, such as Microsoft® Excel®.

FlowShark Pulse Features

- Profiling sensor measures average velocity by integrating up to 16 discrete point velocities in every sample
- Suitable for unusual or dynamic velocity profiles
- One analog input, 2 analog outputs, and 2 relays
- Built-in password-protected Web server interface
- No calibration required
- No laptop required – all functions accessible from touchpad
- No software required – data stored on Compact Flash Card in ASCII format readily opened in Microsoft Excel
- 128 MB memory card (provides over 2 years of storage for 5-minute readings)
- Insertion sensor for tapping in closed pipes, gated cross correlation velocity sensor with optional ultrasonic depth sensor
- 2-year warranty
- Cable lengths up to 820 feet (250 meters)
- All keypad functions and data collection available via Internet using connection to internal Web server
- Accuracy error less than 1% for velocity and +/- 0.08 inches (0.20 cm) for depth

Applications

The FlowShark Pulse with insertion sensor is designed for the most demanding permanent monitoring applications in closed pipes where access to the pipe interior is limited:

- Supports control systems such as treatment plant operations, pump stations, inline storage controls, industrial processes, or collection system routing controls
- Measures flow in full or partially full closed pipes
- Measures depth in flows as low as 1.6 inches (4.1 cm) and velocity in flows as low as 2 inches (5 cm)
- Interfaces with SCADA systems through analog output channels or via MODBUS TCP

About ADS

ADS® LLC develops and provides technology-based hardware and software products and services for the water, wastewater, and hydroelectric industries. ADS pioneered the industry's first flow monitoring hardware and software products over 41 years ago, and today continues to provide the highest quality products and services to its clients.

www.adsenv.com

ADS® LLC

FlowShark Pulse Insertion Sensors

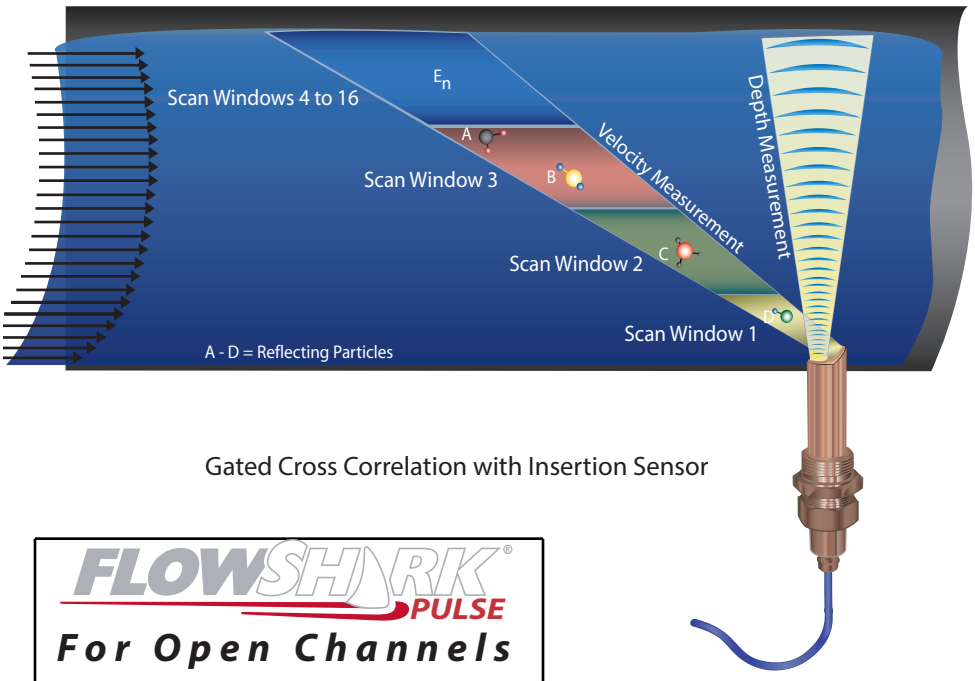
The FlowShark Pulse minimizes the cost and the footprint of underwater sensors by combining two sensor technologies within a single, streamlined housing. This housing, measuring only 9.7 inches (24.6 cm) in length and 1.4 inches (3.6 cm) in diameter, contains the following sensors:

Gated Cross Correlation Velocity Sensor

The velocity sensor in the FlowShark Pulse is a state-of-the-art advancement in velocity sensing technology. This complex technology tracks the movement of velocity particle signatures within 16 separate "gates" of the vertical cross-section of the flow. These gates are integrated across a two-dimensional cross-section in order to compute average velocity. This insertion velocity sensor intrudes only 0.6 inches (1.5 cm) into the pipe.

Ultrasonic Depth Sensor

The submerged ultrasonic depth sensor transmits a high-frequency sound pulse along a vertical path from the sensor to the water surface. The water surface acts as a reflecting boundary to the sound pulse. The sensor measures the short time interval that the pulse of sound requires to travel to the water surface and reflect back to the sensor. The computed speed of sound is then used to calculate the depth of flow.



Gated Cross Correlation with Insertion Sensor

FLOWSHARK® PULSE

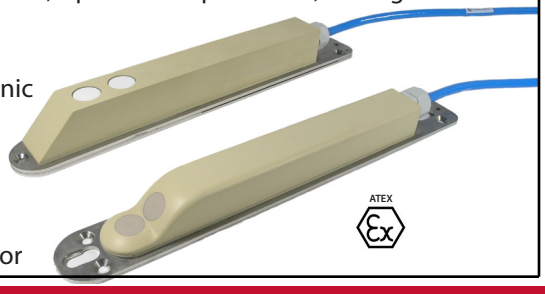
For Open Channels

The FlowShark Pulse can be configured to measure open channels with three sensor technologies in a single, streamlined housing. The wedge sensors for the FlowShark Pulse include an ultrasonic depth sensor, a pressure depth sensor, and a gated cross correlation velocity sensor.

Optional Air-Ultrasonic Level Sensor

Wedge Sensors

Water-Ultrasonic Combination Sensor



FlowShark Pulse Specifications

- 100-240 volts AC or 24 volts DC power
- LAN/WAN Interface (Ethernet)
- Polycarbonate enclosure weighing 6.4 lbs. (2.9 kg)
- Backlit graphic display: 128 x 128 pixels
- 18-button touchpad
- Data storage: 128 MB Compact Flash Card
- Cable length: 33 feet (10 m); extendable to 820 feet (250 m)

Gated Cross Correlation Velocity Sensor

- Gated cross correlation with digital pattern recognition technology operating at 1 MHz
- Range: -3.28 to 19.7 fps (-1.00 to 6.00 mps); maximum depth for full velocity profile: 40 inches (101 cm) (basic model)
- 16 scan layers
- Error less than or equal to 1%

Ultrasonic Depth Sensor

- Submerged ultrasonic transit-time technology
- Range: 1.6 to to 78.7 inches (4.0 to 200 cm)
- Accuracy: +/- 0.08 inches (0.20 cm)

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